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IN THE CLAIMS:

1. **(Original)** A method for generating a speech signal comprising the steps of:
  - receiving super-class information;
  - receiving fundamental frequency information;
  - applying each tuple of super-class information and fundamental frequency information to a module that correlates fundamental frequencies with LSF vectors for different super-classes, to obtain a desired LSF vector associated with each of said tuples; and
  - generating a speech spectrum, in association with each tuple, that is characterized by an LSF vector that is, or approximates, said desired LSF vector associated with each of said tuples.
2. **(Original)** The method of claim 1 wherein said step of generating a speech spectrum comprises the steps of generating a train of pulses with a repetition rate that corresponds to said fundamental frequency information, and filtering said train with a filter having the transfer function  $\frac{1}{1 - \sum_{i=1}^p b_i z^{-i}}$ , where the  $b_i$ 's are coefficients that are derived from said desired LSF vector.
3. **(Original)** The method of claim 1 where sequences of tuples of super-class information and fundamental frequency are divisible into groups, where each group shares a common super-class designation.
4. **(Original)** The method of claim 3 where super-class designations are phoneme type designations.
5. **(Original)** The method of claim 1 where said module is a database.

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**6. (Original)** The method of claim 1 further comprising a step of receiving a group of speech samples in association with each received unit of fundamental frequency information, and information representative of LPC coefficients of said group of speech samples.

**7. (Original)** The method of claim 6 where said step of generating a speech spectrum comprises filtering each group of speech samples to form a speech spectrum with said LPC coefficients received in said step of receiving being replaced with LPC coefficients that are related to said desired LSF vector.

**8. (Original)** The method of claim 6 where said step of generating a speech spectrum comprises passing each group of speech samples through a

filter having the transfer function  $\frac{1 - \sum_{i=1}^P a_i z^{-i}}{1 - \sum_{i=1}^P b_i z^{-i}}$  where the  $a_i$ 's are said LPC

coefficients received in said step of receiving and the  $b_i$ 's are LPC coefficients derived from said desired LSF vector associated with each of said tuples

**9. (Original)** A method for generating a speech signal comprising the steps of:

- receiving a group of speech samples for a speech frame;
- receiving fundamental frequency information for said speech frame;
- associating super-class information with said speech frame;
- applying said super-class information and said fundamental frequency information to a module that correlates fundamental frequencies with LSF vectors for different super-classes, to obtain from said module a desired LSF vector of coefficients associated with each of said tuples; and

- modifying said group of speech samples to create a group of modified speech samples, such that said group of modified speech samples has a spectrum envelope whose LSF vector approximates said desired LSF vector.

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**10. (Original)** The method of claim 9 further comprising a step of receiving a vector of coefficients that characterize said received group of speech samples.

**11. (Original)** The method of claim 10 where said coefficients in said received vector of coefficients are linear predictive coding coefficients.

**12. (Original)** The method of claim 11 where said modifying comprises applying said group of speech samples to a filter having the transfer function

$$\frac{1 - \sum_{i=1}^p a_i z^{-i}}{1 - \sum_{i=1}^p b_i z^{-i}}$$
 where the  $a_i$ 's are said linear predictive coding coefficients and the  $b_i$ 's are linear predictive coding coefficients derived from said desired LSF vector.

**13. (Original)** A method for generating a speech signal comprising the steps of:

- receiving fundamental frequency information for a speech frame;
- associating super-class information with said speech frame;
- applying said super-class information and said fundamental frequency information to a module that correlates fundamental frequencies with LSF vectors for different super-classes, to obtain from said module a desired LSF vector of coefficients associated with each of said tuples; and

- modifying said group of speech samples to create a group of modified speech samples, such that said group of modified speech samples has a spectrum envelope whose LSF vector approximates said desired LSF vector.

**14. (Original)** The method of claim 13 where said step of associating includes, at least for some speech frames, a step of receiving super-class information.

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**15. (Original)** The method of claim 13 where said desired LSF is obtained in said module from a memory that maintains information about each super-class.

**16. (Original)** The method of claim 13 where said desired LSF is obtained in said module through computations based on parameter information stored in a memory, where said parameter information is sensitive to said super-class and to said fundamental frequency.

**17. (Original)** The method of claim 16 where said parameter information comprises parameters  $\alpha_i$ ,  $\mu_i$  and  $\Sigma_i$ , where  $i$  is an index designating one of  $Q$  different classes,  $\alpha_i$  is the prior probability of class  $i$ , such that  $\sum_{i=1}^Q \alpha_i = 1$ ,  $\mu_i$  is a mean vector for variable  $z = [F_0, \text{LSFs}]^T$ , and  $\Sigma_i$  is a covariance matrix, and where said desired LSF vector is computed from , where

$$\sum_{i=1}^Q h_i(x) \cdot [\mu_i^y + (\Sigma_i^{yx})(\Sigma_i^{xx})^{-1}(x - \mu_i^x)]$$

where

$$h_i = \frac{\alpha_i N(x, \mu_i^x, \Sigma_i^{xx})}{\sum_{j=1}^Q \alpha_j N(x, \mu_j^x, \Sigma_j^{xx})}$$

$$\Sigma_i = \begin{bmatrix} \Sigma_i^{xx} & \Sigma_i^{xy} \\ \Sigma_i^{yx} & \Sigma_i^{yy} \end{bmatrix},$$

and

$$\mu_i = \begin{bmatrix} \mu_i^x \\ \mu_i^y \end{bmatrix}.$$

**18. (Cancelled).**

**19. (Cancelled).**

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**20. (Currently Amended) A method for communicating information from a transmitter to a receiver comprising the steps of, in the transmitter:**

receiving a speech signal;

subdividing said speech signal into phoneme-related segments;

subdividing each of said segments into a plurality of speech frames;

analyzing each frame of said speech frames identify at least fundamental frequency of speech in said frame, and energy in said frame; and

transmitting said information that specifies said fundamental frequency and said energy.

at least for some of said speech frames, those being selected speech frames, transmitting information about super-class identities of the phoneme-related segments from which said selected speech frames are subdivided

~~The method of claim 18 further comprising the steps of~~ receiving said fundamental frequency information transmitted by said step of transmitting for each speech frame;

receiving said super-class identities;

associating received super-class information with received fundamental frequency information;

applying said fundamental frequency information and associated super-class information and to a module that correlates fundamental frequencies with LSF vectors for different super-classes, to obtain from said module a desired LSF vector of coefficients associated with each of said tuples; and

creating a speech frame with a spectrum envelope that is related to said desired LSF vector. speech samples, such that said group of modified speech samples has a spectrum envelope whose LSF vector approximates said desired LSF vector.